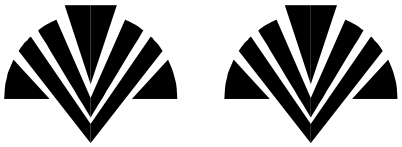
THE ENHANCED SCHOOL HEALTH SERVICES PROGRAM DATA REPORT



1997-98 School Year

Massachusetts Department of Public Health
Bureau of Family and Community Health
Office of Statistics and Evaluation

MARCH 1999

Acknowledgments

Author
Robert B. Leibowitz, Ph.D.
Office of Statistics and Evaluation
Bureau of Family and Community Health
Massachusetts Department of Public Health

The author gratefully acknowledges Sion Kim Harris, Kathleen Atkinson, Deborah Klein Walker, and the Technical Review Committee for their editorial revisions as well as clinical and statistical expertise. The author would also like to thank Anne Sheetz, Margaret Blum, Diane Gorak, Alice Morrison, Thomas Comerford, and Catherine Sibble of the School and Adolescent Health Unit for their work with the Enhanced School Health Services programs, and the nurse leaders and school nurses at each of the districts for providing their time and clinical expertise. Finally, the author thanks Alexis Garcia for general assistance, and the Data Processing unit at the Massachusetts Department of Public Health for their help in processing the numerous data collection forms.

For additional copies of this report, please contact the OSE administrative assistant at:

Massachusetts Department of Public Health
Bureau of Family and Community Health
Office of Statistics and Evaluation
250 Washington Street, 5th Floor
Boston, MA 02108-4619
(617) 624-5536

Table of Contents

Introduction

In recent years four major changes have dramatically affected school health services: (a) changes in family structure and patterns of parental employment, (b) the impact of diverse cultural and linguistic groups, (c) an increase in the number and severity of illness of students with special health care needs who are enrolled in schools, and (d) the rise of social morbidities among children such as substance abuse, depression, and violence.

These changes have resulted in an increased demand for health services in the schools:

- With more working parents, children who are sick with mild or chronic conditions are less likely to be monitored at home on school days and more likely to be sent to the school nurse for assessment and a determination as to whether they need to see a physician.

- Some "newcomer" groups rely on the school as a source of information about what services or providers are available in the community. They may not understand how to obtain care elsewhere because of language or cultural barriers and therefore may look to the school health service for assistance.

- Improved medical technology has enhanced the health of children and adolescents with a variety of conditions and diseases previously associated with short life expectancy, e.g., cystic fibrosis, childhood leukemia, diabetes, juvenile rheumatoid arthritis and kidney disease. In addition, children assisted with medical technology, e.g., catheterizations, tracheostomies, ventilators, etc., are now attending school. Enhanced social attitudes promoting inclusion, as well as state and national laws related to disability rights and access to education, have resulted in more children requiring nursing care and other health-related services during the school day.

- Students spend a large part of their day at school; therefore, the school can be an important site where health and education risks, e.g., depression, absenteeism, substance use, may be identified and interventions made. This can result in increased demands on professional health services in the schools.

The Department of Public Health recognizes the need for quality school health services and provides consultation to all of the Commonwealth's school districts. Since 1993, with resources from the Health Protection Fund, the Department of Public Health has extended to a limited number of school systems the opportunity to expand on the basic school health services model by establishing the Enhanced School Health Service Program (ESHS). At that time thirty-six school districts were funded for three and half years to: (a) strengthen the infrastructure of school health services in the area of personnel and policy development, programming, and interdisciplinary collaboration; (b) incorporate health education programs, including tobacco prevention and cessation programs, into the existing school health programs; and (c) develop linkages between school health service programs and community health care providers.

In October 1997, the Department funded 19 school districts (with 18 separate contracts[1]) under the Enhanced model and 8 school districts with experience in developing the Enhanced model to provide consultation to 64 (8 each) additional school districts ("recipient schools") desiring to start similar school health service programs across the Commonwealth.

School systems for both models were selected for participation through a competitive bid process based on a Request for Response (RFR) developed by the Massachusetts Department of Public Health (MDPH). The staff in the School and Adolescent Unit in the Division of Maternal, Child, and Family Health within the MDPH Bureau of Family and Community Health administer the program.

Data Collection Methods

Over the course of the 1997-98 school year, data were collected from the 19 ESHS school districts and 8 ESHSC school districts (see **Appendix A**) whose contractual obligations require them to submit activity reports once a month to MDPH. This **monthly activities report** focuses on questions regarding health services activities, medication management, medical procedures, case management, and tobacco prevention services that took place during the prior month.

In addition, the 19 school districts in the ESHS program submitted **status reports** twice a year regarding program infrastructure, MIS development, quality evaluation, and health screenings and surveys. The recipient school districts in the ESHSC program submitted this report once a year, although the 8 ESHSC consultation districts were not required to submit these reports because their programs had already developed all components of ESHS.

Data from the monthly activities reports submitted by ESHS/ESHSC program districts during the 1997-1998 school year is the primary source of information for the statistics presented here. The summary statistics contained in this report were generated from a subset of these monthly reports—those covering the time period January 1 - April 30, 1998 (four months).

The January through April time period was chosen for detailed analysis because it was the period in which the largest number of districts submitted data, thus minimizing the difficulties in analysis and interpretation that frequently arise with incomplete data. Monthly activities reports for this time period were received from 24 of the 27 school systems in the program (88.9% of program total) serving a total of 145,321 enrolled students (16.1% of state total). Data from 3 school districts could not be included in this report, as one district did not collect data during the first few months of the school year because of staffing problems, one very large district was unable to enter and compile their massive amount of data in time to be included in this report, and one district sent in data that was subsequently misplaced and duplicate records were unable to be recompiled in time to be included in this report.

In some instances, statistics are based on fewer than 24 school systems due to incomplete data; all such instances are noted in this report where appropriate. For the 24 districts that form the basis of this report, the median student enrollment was 3,600, with a range of 540 to 23,778 students. Urban, suburban, and rural districts were represented in these samples, as were regional and vocational school systems.

[1] One ESHS contract funds two districts.

Data Analysis Methods

In order to reduce the potential for confusion, the statistical concepts and terms used in this report are described below.

For each measurement or "indicator," a ***district-level statistic*** is determined in each district by calculating a monthly average for the 4-month evaluation period. The **monthly average** for a particular district is calculated by adding up the total number of events or encounters that occurred in a particular district during the evaluation period and dividing that total by the number of months included in that evaluation period. Because it is awkward to refer constantly to the "monthly average for the district" or the "district-based monthly average," these data are referred to as the **district average**. These two terms--the monthly average and district average--are used interchangeably in this report. All monthly averages in this report were calculated over the same four-month period (January, 1998 to April, 1998).

Wherever possible, standard units of analyses (*rates*) are used, as they facilitate both cross-district and historical comparisons which can provide context and meaning to the statistics. The standard units of analysis that were used most frequently in this report are the monthly rate per 1,000 student health encounters, the monthly rate per 1,000 enrolled students, and the monthly rate per full-time equivalent (FTE) nurse. The **monthly rate per 1,000 student health encounters** is calculated by dividing the monthly average for that indicator by the total number of student health encounters in that district and multiplying the result by 1,000. Similarly, the **monthly rate per 1,000 enrolled students** is calculated by dividing the monthly average by the total number of enrolled students in that district and multiplying the result by 1,000. Rates per thousand enrolled students were calculated utilizing October 1997 student enrollment figures provided by the Massachusetts Department of Education (see Appendix A). Finally, the **monthly rate per full-time equivalent (FTE) nurse** is calculated by dividing the monthly average by the total number nurse FTEs in that district. Sometimes the rate is not based on an average of *monthly* data but on *full school year* data. For example, the **rate of health screenings per 1,000 students** is determined by dividing the total number of screenings *that year* by the number of students and multiplying the result by 1,000.

Program-wide statistics describe not individual districts, but the ESHS/ESHSC program as a whole. In these calculations, each district represents a data point that is used in calculating summary statistics. For example, when averages are calculated for the 24 districts, the result is a collection of 24 district averages that can be arrayed from lowest to highest along a frequency distribution. When frequency distributions are *skewed* (that is, the values tend to clump around either the lowest or highest value, rather than around the middle), the *median*, rather than the *average*, is used to measure central tendency. Because most of the ESHS/ESHSC frequency distributions were skewed, the median is used throughout this report. The **median** represents the number above and below which exactly 50% of the districts fall. It is a better measure of central tendency than the *average* for skewed data, because the average tends to be more affected by extreme values. The most common use of median in this report is with district-based monthly averages; for a particular indicator, the median for the group of ESHS/ESHSC districts (a *program-level* statistic) is the district average (or monthly average) above and below which exactly 50% of the individual district averages fell. The **range** of a set of district averages refers to the lowest and highest values across the entire group of ESHS/ESHSC districts. The district with the median value for an indicator is sometimes referred to as the **median district.** The median value across all the monthly district averages is also referred to as the **median district average**.

Medians can also be calculated for rates. For example, the **median Injury Report rate** (i.e., Injury Reports per 1,000 health encounters) is calculated by first putting the total number of Injury Reports in the form of a rate (for each district, dividing the total number of Injury Reports by the number of student health encounters and multiplying by 1,000), and then finding the median of these rates.

Data Limitations

This report focuses exclusively on the delivery of school health services by nursing staff. In addition, because project sites were not selected to serve as a representative sample of the Commonwealth, this summary is descriptive in nature and is not intended to be used to make generalized statements about health services in all Massachusetts public schools. Furthermore, the statistics presented in this summary report are not comparable to statistics published in past ESHSP reports because the set of school districts is not the same as in prior years. Although there is some overlap, many of the school districts included in this year's program are new to the program, and many of the districts that were in the program in the past are no longer part of the current program. The descriptive data presented here also do not capture the dynamic and multi-faceted nature of health services delivery in a school system, which would require in-depth qualitative analysis of the program sites. Furthermore, most project sites were not computerized and relied on hand-tallying of data by individual nurses in their districts. Hence, it was impossible to control for factors including data-entry errors at the district level, consistent misinterpretation of survey questions, and numerical "guesstimates" provided by participants. For example, the types of errors encountered include the following: inclusion of non-prescription medications in the prescription medication counts, counting the number of dosages rather than the number of individual students with prescription medications, counting the total amount of time spent on medical procedures each month rather than the average amount of time per procedure, and confusion about the definition of "health encounter." Some of these data quality problems can lead to significant under- or over-counting. Finally, interpretation of this data is limited due to the lack of specific knowledge about collateral factors including school district structure and local issues.

Participating districts were required to implement, in a short period of time, both program innovations that entailed major organizational change and, in most cases, the development of an internal data collection system (see **Appendix B**). Therefore, this report represents a preliminary attempt to measure the health services activity in these participating school systems. Improvements in site data collection procedures, data collection tools, and data collection instructions and training will lead to continued improvements in data validity. For example, from the experience gained from data problems encountered in earlier years, the ESHSP data collection forms underwent significant revision for 1997-1998. Additional enhancements in data validity and reliability will be expected as sites continue to improve their data collection methods during the remainder of the funding cycle.

Findings

School Nurse Staffing Patterns

For the **24** ESHS/ESHSC districts whose data contributed to this report, the equivalent of **228.5** full-time school nurses served a total of **147,632** enrolled students during the 1997-98 school year.[2]

As a result of ESHSP funding, **17.3** school nurse full-time equivalents (FTEs) were added to school systems. Funding sources for the **228.5** total school nurse FTEs in the districts can be broken down as follows:

- **17.3 (7.6%)** were funded by the MDPH Enhanced School Health Services Program;
- **211.2 (92.4%)** were funded through local school budgets and other sources.

The ESHSP median was **570** students per nurse, a ratio between that recommended by the American Nurses Association (ANA) for regular education populations **(1 to 750)** and that recommended for special populations **(1:225)** or for severely/profoundly disabled populations **(1:125)**.[3] Across the 24 districts, nurse to student ratios ranged from **1:231 to 1:1,106**; four of those districts (**16.7%**) had nurse to student ratios that fell below the ANA guidelines for regular student populations.

School Health Services Activity

The primary goals of the Enhanced School Health Services Program are to reinforce the infrastructures of existing school health services programs and to improve the delivery of health services to students. Toward that end, participating sites were required to assess over time the type and scope of school nursing activity in their districts. These activities were divided into seven categories of data which are presented below:

1) health encounters, 2) injury reports, early dismissals, and referrals for emergency health services, 3) medication management, 4) health screenings, 5) medical procedures, 6) linkages, and 7) nursing case management. *Unless otherwise specified, the following data provide a* ***four-month overview*** *of the health services activity in these districts during the 1997-98 school year*.

Health Encounters

Districts tracked on a monthly basis the total number of school-based student health encounters. An "encounter" was defined as *any contact with a student during which the school nurse provided counseling, treatment, or aid of any kind*. Casual conversations and mandatory screenings were not included in this count; population-based activities such as mandatory screenings were addressed in the semi-annual program status report.

Between January 1 and April 30, 1998, 24 school districts reported a combined total of **709,649** student health encounters (see table below). Monthly averages for individual districts for this 4-month period ranged from **496** encounters per month to **30,358** encounters per month, with the median being an average of **5,077** encounters per month.

---

[2] These statistics include data from the ESHSC *lead* districts, but do not include data from the ESHSC *recipient* districts.

[3] American Nurses Association. *Standards of School Nursing Practice*, Kansas City, MO, 1983.

Over the four-month period, the median number of health encounters per student was **1.5** *health encounters per student* each month. Of course, while some students may need to be seen several times each month, others need not be seen at all. The median nurse encounter rate was **692.5** student health encounters *per full-time school nurse* each month. The overwhelming majority (94.0%) of the 709,649 student health encounters took place inside school health rooms. Nursing treatment; nursing assessment, triage, and reassessment; and first aid were the most common types of encounters.

Number and Percentage of Student Health Encounters
January 1 - April 30, 1998 (n=24 districts)

	First Aid	Nursing Assess-ment*	Nursing Treatment	Mental Health Counseling	Other	TOTAL
Inside health room	128,294	230,738	261,381	11,949	34,495	666,857
Percent of total	19.2%	34.6%	39.2%	1.8%	5.2%	100.0%
Outside health room	6,533	5,785	4,132	1,705	24,637	42,792
Percent of total	15.3%	13.5%	9.7%	4.0%	57.6%	100.0%
Total	134,827	236,523	265,513	13,654	59,132	709,649
Percent of total	19.0%	33.3%	37.4%	1.9%	8.3%	100.0%

* Includes nursing assessment, triage, and reassessment of illness by nurses

Health service encounters with school staff (i.e., teachers and administrators) regarding their *own* health issues were also monitored by school systems. Between January and April, 228.5 full-time school nurses managed a total of **14,607** staff health encounters in 24 districts (see table below). Monthly averages for staff health encounters among the 24 school districts ranged from **1.3** to **809.5** staff health encounters per month. The median monthly average for a single district was **113.0** staff health encounters per month. The median monthly average *per full-time school nurse* was **13.7** staff health encounters per nurse each month.

Number and Percentage of Staff Health Encounters
January 1 - April 30, 1998 (n=24 districts)

	First Aid	Nursing Assess-ment*	Nursing Treatment	Mental Health Counseling	Other	TOTAL
Number of Encounters	2,564	4,723	4,512	944	1,864	14,607
Percent of total	17.6%	32.3%	30.9%	6.5%	12.8%	100.0%

* Includes nursing assessment, triage, and reassessment of illness by nurses

Injury Reports, Early Dismissals, and Referrals for Emergency Health Services

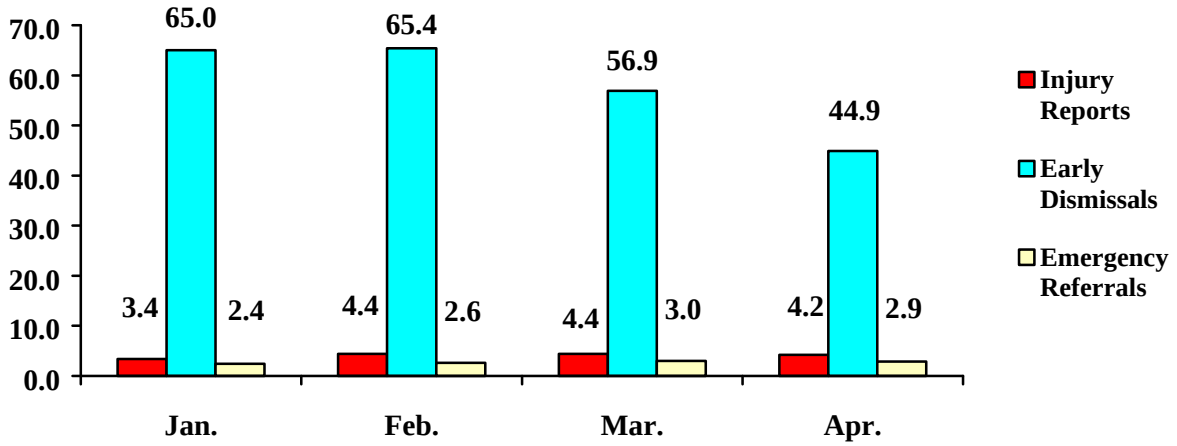
An important function of school nursing practice is to provide on-site health services to students who are sick, injured, or experiencing a serious health emergency. Each month sites tallied the number of on-campus student injury reports, early dismissals due to illness, and referrals for emergency health services in their districts. These events represent a small subset of the total number of student health encounters in a school system. For the first four months of 1998, 24 districts reported:

- a total of **4,201** *injury reports* with the median district reporting **23.4** reports per month (range: **4.8 to 166.3** reports per month);
- a total of **45,196** *early dismissals due to illness* with the median district reporting **290.8** dismissals per month (range: **31.3 to 1,682.3** dismissals per month);
- a total of **3,714** *referrals for emergency health services* with the median district reporting **14.9** referrals per month (range: **0.5 to 301.8** referrals per month).

The following graph compares, *for every 1,000 student health encounters*, the median rates of student injury reports, early dismissals due to illness, and referrals for emergency health services in the 24 school districts for the time period January 1 - April 30, 1998:

Student Injury Reports, Early Dismissals, and Referrals for Emergency Health Services:

Median Number of Incidents Per 1,000 Student Health Encounters
January 1 - April 30, 1998 (n=24 districts)



Medication Management

In 1993, the Massachusetts Department of Public Health promulgated regulations governing the administration of medications in public and private schools. The purpose of these regulations (105 CMR 210.000) is to provide minimum safety standards for the administration of prescription medications to students in the Commonwealth.

The school nurse's role in managing the medication administration program for the district is broad in scope. In addition to developing district-wide medication policies in collaboration with the school committee, school administration, and school physician, the school nurse:

- administers medications to students (including monitoring students' response to medications);
- delegates the administration of selected medications to appropriately trained school staff (if the district is registered with the MDPH to do so);
- ensures the proper training of these designated staff; and
- establishes a formal record-keeping system for the district's medication administration program.

School systems participating in the Enhanced School Health Services Program tracked monthly the numbers of students on a variety of prescription medications. The average number of prescriptions per month for the ESHS program as a whole was derived by calculating for each site the monthly average number of prescriptions for each medication and then summing these averages across all the sites. Between January 1 and April 30, 1998, 24 sites reported a combined total of **16,327** students per month on *short-term* and *long-term* prescription medications (see table below), with the median district reporting an average of **410** students per month (range: **48 to 3,315** students per month). Among prescriptions taken on a scheduled, daily basis, psychotropic medications were the most common, while among prescriptions taken on an "as-needed" (PRN) basis, asthma medications were the most common.[4]

Average Number of Students Per Month on Prescription Medications
January 1 - April 30, 1998 (n=24 districts)

	Anti-biotics	Asthma	Epi-nephrine	Insulin	Psycho-tropic	Others	Total
Daily Medications							
Sum Total	346.5	529.0	12.5	45.0	3,272.5	335.0	4,540.5
Median District	13	13	0	1	94	10	(27.8%)
Lowest Value	1	0	0	0	15	0	
Highest Value	36	101	9	11	522	51	
PRN Medications							
Sum Total	85.8	3,228.3	518.5	53.5	54.5	7,846.0	11,786.5
Median District	1	89	19	1	1	79	(72.2%)
Lowest Value	0	12	3	0	0	10	
Highest Value	18	315	58	8	10	3,022	
							16,327.0

Note: The statistics shown here may overstate the actual medication rates as some districts were unable to count the number of students taking medications and reported prescriptions and / or doses instead.
PRN refers to medications taken on an "as-needed" basis.

The following table compares, across 24 school systems, median numbers of students on prescription medications each month per 1,000 students in the district for four types of medications. These numbers reflect the students *known by school nurses* to be on prescription medication and are most likely *underestimates* because students who self-administer do not always come to the attention of school nurses.

[4] PRN is an abbreviation for "pro re nada," a Latin term meaning "as needed." PRN medications are not scheduled for set times, but given as needed. For example, a pain medication that is given as needed is considered a PRN medication.

Students on Selected Prescription Medications:
Median Rate Per 1,000 Students
January 1 - April 30, 1998 (n=24 districts)

Type of Medication	Medication Type	
	Daily	PRN*
Antibiotics	2.6	0.3
Asthma Medication	3.0	28.2
Ana Kit / Epinephrine	0.0	5.0
Insulin	0.3	0.3
Psychotropics	25.0	0.2
Others	2.8	23.8

* PRN refers to medications taken on an "as-needed" basis.
Note: The statistics shown here may overstate the actual medication rates as some districts were unable to count the number of students taking medications and reported prescriptions and / or doses instead.

Health Screenings

Public schools in Massachusetts are required by law to conduct postural, hearing, and vision screening on all students.[5] Some school systems have also opted to conduct voluntary health screenings based on the particular health needs of their students. School nurses are responsible for ensuring that these screenings are completed and for referring students for follow-up care when needed. During the prior school *year*, school nurses at 18 participating districts conducted the following number of required and voluntary health screenings on students (This information was not collected from the consultation districts). The following numbers represent *initial* screenings, and do not include *re-screenings*:

Student Health Screenings
January 1 - April 30, 1998 (n=18 districts)

Type of Screening	Yearly Totals	Screenings Per 1,000 Students			% of Districts
	All Districts	Median District	Lowest Value	Highest Value*	Doing This Type of Screen
Height/Weight	58,251	703.1	0.0	1,148.6	93.3%
Vision	55,687	729.3	146.9	987.9	100.0%
Head Check	49,893	521.2	9.3	1,424.5	100.0%
Hearing	48,184	670.1	0.0	987.6	94.4%
Postural	26,875	321.4	75.5	605.9	100.0%
Dental	6,022	0.0	0.0	577.6	35.3%
Nutritional	458	1.9	0.0	71.6	56.3%

Includes districts reporting zero screenings but excludes districts that did not track a particular type of screening.

[5] *The law permits waivers under certain circumstances. Additionally, screenings are done according to grade requirements.*

Medical Procedures

The enrollment of children assisted by medical technology in the public school system has increased in recent years. This phenomenon presents multiple challenges for school administrators, parents and guardians, school health services personnel, teachers, and students. ESHSP school districts collected data on students assisted by medical technology and reported the following:

Summary of Medical Procedure Activity
January 1 - April 30, 1998 (n=24 districts)

Type of Procedure	Average # of Procedures Per Month				Average # of Students Per Month	Average # of Hours/ Procedure	% of Districts Per-forming Procedure
	Sum Total	Median District	Lowest Value	Highest Value	Sum Total	Median District*	
Glucometer Testing	1990	54	2	485	135	0.11	100.0%
Blood Pressure Check	1334	37	4	235	911	0.10	100.0%
Nebulizer Treatment	684	21	0	105	128	0.26	79.2%
Nasogastric/Gastric Tube	664	7	0	131	53	0.25	62.5%
Catheterization/Catheter	550	14	0	93	37	0.25	66.7%
Colostomy/Ileostomy Care	67	0	0	29	7	0.13	20.8%
Suction	50	0	0	22	12	0.17	16.7%
Oxygen Care	47	0	0	28	7	0.12	12.5%
Tracheostomy Care	16	0	0	13	5	0.11	12.5%
Urostomy Care	8	0	0	8	1	0.10	4.2%

* Among those districts where the procedure was performed at least once.

In addition, 24 districts reported performing a combined total of 1,096 "Other" medical procedures per month. The overall program total was **6,506** medical procedures per month, with the median district reporting **188** medical procedures per month, and with a median of **24.1** medical procedures per full-time nurse each month. Monthly medical procedure rates per 1,000 students were as follows:

Medical Procedure Rates*
January 1 - April 30, 1998 (n=24 districts)

Type of Procedure	Monthly Rate Per 1,000 Students		
	Median District	Lowest Value	Highest Value
Glucometer Testing	13.0	1.1	38.5
Blood Pressure Check	8.2	1.6	43.1
Nasogastric/Gastric Tube	6.9	0.1	30.6
Nebulizer Treatment	5.7	0.2	15.0
Oxygen Care	4.4	3.6	5.3
Catheterization/Catheter	3.7	0.6	35.6
Urostomy Care	3.2	3.2	3.2
Suction	1.8	0.1	2.9
Colostomy/Ileostomy Care	1.2	0.1	6.9
Tracheostomy Care	0.4	0.1	2.3

* Among those districts performing the procedure at least once.

Linkages

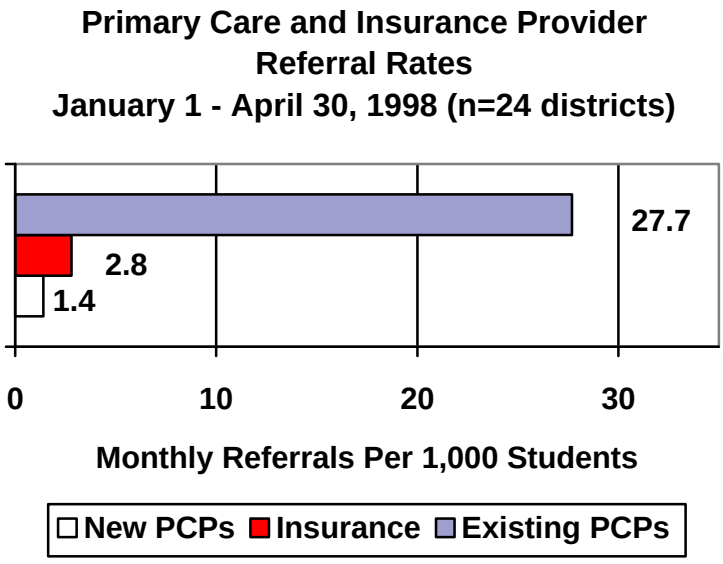
ESHSP school systems identified students without primary care and, in consultation with their families, referred them to appropriate health care services. School systems also provided many referrals to students' existing primary care providers. During the first four months of 1998, 23 participating districts reported the following:

- ESHSP identified and referred a combined total of **18,768** students to primary care providers. These referrals included:
  - **1,757** new referrals to primary care providers, and
  - **17,011** referrals to students' existing primary care providers.

- The total median monthly referral rate among ESHSP school districts was **150** students per month (range: **8.5 to 883.3** students per month).

- The median monthly referral rate per 1,000 students to new primary care providers was **1.4 per 1,000 students** per month (range: **0.3 to 11.8**); the median monthly rate for referrals to existing primary care providers was **27.7 per 1,000 students** per month (range: **6.3 to 105.1**);

In addition, 24 districts reported that they referred a total of **1,888** students to health insurance providers (including MassHealth and Children's Medical Security Plan). The median district referred **7.8** students per month (range: **0.3 to 98.5** students per month) to health insurance providers. The median monthly referral rate per 1,000 students to health insurance providers was **2.8 per 1,000 students** (range: **0.3 to 26.5**).



Nursing Case Management

Data from the monthly activities report revealed that, beyond providing direct care to students, school nurses spent a significant portion of their day performing case management duties that included

communication with families, other school staff, and community health care providers about student health concerns. Over a four-month period, **228.5** full-time school nurses from **24** districts conducted:

- a total of **99,394** *health counseling and education encounters with parents* (including phone calls, meetings, and conferences, but excluding home visits), with the median district reporting **713** encounters per month (range: **67 to 3,134** encounters per month);

- a total of **444** *home visits*, with the median district reporting **1.9** home visits per month (range: **0 to 28** home visits per month);

- a total of **38,074** *phone calls, meetings, and conferences with other school staff* about student health issues, with the median district reporting **114** meetings per month (range: **18 to 1,981** meetings per month);

- a total of **10,632** *phone calls with other agencies and health providers* about student health issues and a median per district of **60** phone calls per month (range: **5 to 561** phone calls per month).

The following chart shows monthly case-management activity levels per school nurse FTE across the 24 participating districts:

Nursing Case Management Activities:
Number of Student-Health Related Activities Per Month Per Nurse FTE
January 1 - April 30, 1998 (n=24 districts)

Type of Activity	Median (Per FTE)	Lowest Value (Per FTE)	Highest Value (Per FTE)
Calls, meetings & conferences with parents	104.4	28.8	387.8
Calls, meetings, & conferences with staff	25.1	10.1	110.1
Phone calls with agencies/providers	7.3	3.8	31.2
Home visits to families	0.3	0.0	2.4

For children with special health care needs, nursing case management involves the development of Individual Health Care Plans (IHCPs) designed to maximize their potential for learning. An IHCP, usually developed by the school nurse in conjunction with the student's family, the school physician, other school staff, and relevant community health care providers, is an individualized care plan that stipulates a student's specific medical, nursing, emergency care, and educational needs while in school during the school day . IHCPs are reviewed on a regular basis to ensure that students receive the appropriate health care they need during the school day.

During the first four months of 1998, 24 Enhanced sites reported:

- a total of **916** *new* IHCPs, with the median district reporting **4** new IHCPs per month (range: **0 to 43** IHCPs per month);

- a median, per full-time school nurse, of **0.6** *new* IHCPs per month (range: **0 to 8.5** IHCPs per month);

- a total of **11,030** *ongoing* IHCPs per month, with the median district reporting **42** ongoing IHCPs per month (range: **1** to **649** IHCPs per month);

- a median rate, per full-time school nurse, of **7.0** *ongoing* IHCPs per month (range: **0.3 to 48.9** IHCPs per month).

Health Education and Tobacco Prevention

School nurses are often called upon to deliver health education in the classroom. In their teaching role they cover topics such as nutrition education, injury prevention, and human growth and development. Over a four-month period, 228.5 full-time school nurses in 24 districts delivered:

- a total of **2,208** classroom presentations to students, with the median district reporting **15** presentations per month (range: **1 to 78** presentations per month);

- a median rate of **2.0** classroom presentations per month per full-time nurse (range: **0.1 to 10.5** presentations per month per school nurse).

As part of the Massachusetts Tobacco Control Program, the Enhanced School Health Services Program was designed to incorporate tobacco use prevention and cessation activities into existing school health services programs. Accordingly, ESHS districts conducted targeted tobacco education activities over the course of the project that included, among other things, at least one survey of student tobacco use. In their most recent efforts, **18** school systems surveyed a total of **20,399** students on their tobacco use, equivalent to **20.2%** of the total student enrollment in these districts.

In addition, during the first four months of 1998, school nurses in ESHS districts provided the following tobacco prevention/cessation services:[6]

- a total of **320.5 students and 22.5 adults** per month participated in tobacco prevention education groups in 15 districts, with the median district reporting **2.0** individuals participating per month (range: **0.3 to 182.3** individuals);

- a total of **46.5 students and 4.8 adults** per month participated in tobacco cessation groups in 15 districts, with the median district reporting **3.0** individuals participating per month (range: **0.3 to 8.3** individuals);

- a total of **228.5 students and 50.5 adults** per month received individual tobacco cessation counseling in 24 districts, with the median district reporting **5.4** individuals participating per month (range: **0.5 to 101** individuals);

[6] Note: The median was calculated in each case only from those districts providing each type of service.

- a total of **34.3 students and 21.8 adults** per month were referred to other tobacco prevention/cessation services in 21 districts, with the median district referring **1.8** individuals per month (range: **0.3 to 8.3** individuals).

Summary

Data collected by the Enhanced School Health Services Program provide a valuable snapshot of school nursing practice in a diverse but non-representative cohort of Massachusetts public schools. The data reveal that school nurses perform a wide array of duties -- direct care, health education, administrative case management, and policy/program development and oversight -- on behalf of students whose health needs range from routine to serious and complex.

Analysis of the ESHS program data for the January 1998 through April 1998 period showed the following:

- The overwhelming majority of health encounters (94.0%) occurred inside health rooms.
- Nurses saw students at a (median) rate of 1.5 health encounters per student each month, with a 7-fold difference between the district with lowest encounter rate (0.6) and the district with the highest rate (4.2).
- Early dismissal rates seemed to have a seasonal pattern, peaking in January and February, while injury reports and emergency referrals did not show a discernable monthly pattern.
- Of the students taking prescription medications, the majority (72.2%) were taking them on an as-needed (PRN) basis, with the remainder taking them on a daily basis.
  - Among students on daily prescription medications, psychotropic medications were by far the most common (25.0 per 1,000 enrolled students, for the median district).
  - Among students taking as-needed (PRN) medications, asthma medications were most common (28.2 per 1,000 enrolled students, for the median district).
- The median number of medical procedures per full-time nurse each month was 24.1 procedures.
- Tobacco prevention programs reached significant numbers of individuals, although activity levels varied widely across districts:
  - 5.4 individuals per month participated in individual tobacco cessation counseling in the median district.
  - 2.0 individuals per month participated in tobacco prevention education groups in the median district.

Future data collection efforts will seek to expand upon current knowledge of health needs in the school setting. Continued refinements in data collection efforts will more accurately capture school nursing and other school health activity. Over time, information on trends in school health encounter activity may assist school nursing staff in improving their delivery of prevention education and intervention services to the school community.

APPENDIX A

Enhanced School Health Services Program Sites: 1997-98

Regular ESHSP Sites

DISTRICT NAME	DISTRICT TYPE	REGION	GRADES	STUDENTS
Central Berkshire Regional (Dalton)	Regional Academic	West	K-12	2,457
Fitchburg	City	North Central	K-12	5,482
Harwich	Town	South East (Coastal)	K-12	1,494
Hudson	Town	East	K-12	2,548
Lowell	City	North East	K-12	15,850
Lynn	City	East (North Shore)	K-12	14,119
Marblehead	Town	East (North Shore)	K-12	2,721
Masconomet Regional (Topsfield)*	Regional Academic	North East	7-12	1,581
--Boxford Elementary	Town	North East	K-6	995
--Middleton Elementary	Town	North East	N-6	672
--Topsfield Elementary	Town	North East	K-6	644
Methuen	Town	North East	N-12	6,394
Mohawk Trail Regional (Buckland)	Regional Academic	North West	K-12	1,687
Newburyport	City	North East	K-12	2,475
Northampton	City	West	K-12	2,919
Pioneer Valley Regional (Northfield)	Regional Academic	North West	K-12	1,156
Revere	City	East (Metro Boston)	K-12	5,673
Smith Voc. & Agricultural High (Northampton)	Voc. & Agricultural	West	9-14	540
Somerville	City	East (Metro Boston)	N-12	5,633
Springfield	City	South West	K-12	23,778
Triton (Byfield)	Regional Academic	North East (Coastal)	K-12	3,308
Uxbridge	Town	South Central	K-12	2,101

* For this report, data from Boxford, Middleton, and Topsfield were aggregated with Masconomet Regional and listed as the "Masconomet District."

ESHSP Consultation Sites

DISTRICT NAME	DISTRICT TYPE	REGION	GRADES	STUDENTS
Boston	City	East	K-12	61,823
Brockton	City	South East	K-12	15,626
Chelsea	City	East (Metro North)	K-12	5,247
East Longmeadow	Town	South West	K-12	2,605
Framingham	Town	East (Metro West)	K-12	7,626
Lawrence	City	North East	K-12	11,458
Minuteman Voc. Tech. Reg. (Lexington)	Regional Voc. Tech.	East	9-13	818
Salem	City	East (North Shore)	K-12	4,841

APPENDIX B

Enhanced School Health Services Program
Minimum Deliverables

Infrastructure for the comprehensive School Health Program strengthened.

1. Quarterly meetings of School Health Advisory committee.
2. Implementation of school district and building emergency plan by Year 1.
3. 100% students requiring prescription medications during the day have medication administration plan by Year I.
4. Role of school health services in student support/intervention program established.
5. Minimum of 1 support group operational in addition to Tobacco by Year II.
6. Annual student health needs assessment conducted and analyzed.
7. A selected number of policies reviewed, revised and approved annually.
8. Position descriptions for school health personnel developed during Year I.
9. 100% of students with special health care needs have individualized health care plans by end of Year I.
10. Marketing brochure completed during Year II.

Comprehensive health education program, including tobacco prevention and cessation, strengthened.

1. Documentation of enforcement activities related to violation of the tobacco-free school policy yearly or enforcement plan for tobacco-free school policy implemented in Year I.
2. Completion of annual tobacco use assessment.
3. Establishment of target goal for reduction in tobacco use, Year II.
4. Documentation of coordinated planning with health education coordinator.
5. Participation in a local community-based coalition addressing child and adolescent health.

Students linked to primary care providers, other community health providers and community prevention programs, and referred to insurance plans if uninsured.

1. Design and implementation of on-going process for identifying primary care providers and health insurers (including HMOs) serving the current student population and referral mechanisms for children/families, Year I.
2. 90% of all children will have their primary care provider and insurance carrier identified by end of Year II.
3. 75% of all children identified as lacking a primary care provider will be referred to a provider within the first year, with incremental increases annually.
4. 100% of uninsured eligible children and adolescents referred to Children's Medical Security Plan (CMSP) for enrollment by end of Year I.

Management information system implemented.

1. 100% of the students' health records will be computerized by Year II.
2. Completed annual report on data specific to the program.

Development of quality improvement process with identification of projects to document the effectiveness and efficiency of the school health service program.

1. In relation to efficiency, work with BFCH to determine formula to calculate cost per encounter.
2. Identification of types of student encounters (first aid, health assessment, medical treatment, etc.) by end of Year I.
3. Develop one health status improvement measure such as % of six graders appropriately immunized, decrease to less than 10% number of students who use tobacco, etc.